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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,479	07/13/2001	Jorg Hauptmann	P20856	6027
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GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			SWERDLOW, DANIEL	
			ART UNIT	PAPER NUMBER
			2644	9

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/806,479

Applicant(s)

HAUPTMANN ET AL.

Examiner

Daniel Swerdlow

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,12,13 and 15-17 is/are rejected.
- 7) ☒ Claim(s) 3,7-11,14 and 18-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1, 6</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6, 12 and 15 through 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 6 recites the limitation “the one output of the rectifier circuit” in the last line. There is insufficient antecedent basis for this limitation in the claim. To advance prosecution to the maximum degree possible, for the purpose of this Office action, examiner assumes the recitation is intended as “one output of a rectifier circuit”.

4. Claim 12 recites the limitation “downstream of the digital rectifier circuit” in the 3<sup>rd</sup> and 4<sup>th</sup> lines. There is insufficient antecedent basis for this limitation in the claim. To advance prosecution to the maximum degree possible, for the purpose of this Office action, examiner assumes the recitation is intended as “downstream of a digital rectifier circuit”.

5. Claim 15 recites the limitations “upstream of the digital power inverter circuit” in the 2<sup>nd</sup> line, “downstream of the digital rectifier circuit” in the 3<sup>rd</sup> and 4<sup>th</sup> lines and “the analog integrator circuit” in the 4<sup>th</sup> and 5<sup>th</sup> lines. There is insufficient antecedent basis for these limitations in the claim. To advance prosecution to the maximum degree possible, for the purpose of this Office action, examiner assumes the recitations are intended as “upstream of a digital power inverter

Art Unit: 2644

circuit”, “downstream of a digital rectifier circuit” and “an analog integrator circuit”, respectively.

6. Claim 16 recites the limitations “upstream of the digital power inverter circuit” in the 2<sup>nd</sup> line and “downstream of the digital rectifier circuit” in the 3<sup>rd</sup> and 4<sup>th</sup> lines. There is insufficient antecedent basis for these limitations in the claim. To advance prosecution to the maximum degree possible, for the purpose of this Office action, examiner assumes the recitations are intended as “upstream of a digital power inverter circuit” and “downstream of a digital rectifier circuit”, respectively.

7. Claim 17 recites the limitations “upstream of the digital power inverter circuit” in the 2<sup>nd</sup> line, “downstream of the digital rectifier circuit” in the 3<sup>rd</sup> and 4<sup>th</sup> lines and “the analog integrator circuit” in the 4<sup>th</sup> and 5<sup>th</sup> lines. There is insufficient antecedent basis for these limitations in the claim. To advance prosecution to the maximum degree possible, for the purpose of this Office action, examiner assumes the recitations are intended as “upstream of a digital power inverter circuit”, “downstream of a digital rectifier circuit” and “an analog integrator circuit”, respectively.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 2, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rasmus et al. (US Patent 6,091,806) in view of Fischer et al (US Patent 6,257,581).

10. Regarding Claim 1, Rasmus discloses an apparatus (i.e., circuit arrangement) (Figs. 2, 6) for implementing and modifying (i.e., electrically generating) a ring signal (i.e., ringing) impedance in a modem (i.e., telephone terminal) (column 3, lines 48-58) by means of a transistor (Fig. 6; reference 608; column 6, lines 32-46) and a capacitor (Fig. 2, reference 236; column 12, lines 32-44), the ringing impedance adaptable by controlling a variable resistance (Fig. 2, reference 238; column 12, lines 35-38) that comprises a transistor (Fig. 6, reference 608; column 12, lines 48-50), having a sine wave input (i.e., ringing alternating voltage) (column 12, lines 13-15) tapped between Tip and Ring (i.e., first and second input) terminals, wherein a microprocessor (i.e., digital controller) (Fig. 2, reference 102; column 12, lines 32-35) indicates a resistance for the ring detect circuit (i.e., is provided for setting the ringing impedance) when in a present country (i.e., adapting the ringing impedance to the given conditions) by controlling the output of an analog to digital converter (i.e., generating a control voltage) (column 12, lines 58-61) that controls the transistor by varying the gain of an amplifier (Fig. 6, reference 612) that amplifies the ringing voltage (i.e., from the ringing alternating voltage). Therefore, Rasmus anticipates all elements of Claim 1 except the digital controller having a programmable digital filter with a transmission function set by programming filter coefficients. Fischer discloses the use of a digital filter (Fig. 5, reference 530; column 5, lines 46-49) for impedance emulation and further discloses that the use of digital filters and the programming of the associated coefficients provide convenient control of transfer functions and enhanced operating range (column 6, lines

Art Unit: 2644

19-29). Fischer discloses that this property of digital filters is particularly useful in adapting interface circuits for use in different countries, the stated purpose of the invention of Rasmus. As such, it would have been obvious to one skilled in the art at the time of the invention to apply a programmable digital filter with a transmission function set by programming filter coefficients as taught by Fischer to the apparatus taught by Rasmus for the purpose of realizing the aforesaid advantages.

11. Regarding Claim 2, Rasmus further discloses the use of a digital signal processor (column 4, lines 61-63) and Fischer discloses digital filter implementation in a digital signal processor (column 6, lines 28-29) or in dedicated hardware (column 6, lines 26-27). It would have been obvious to one skilled in the art at the time of the invention to implement the digital filter of the combination made obvious by Rasmus and Fischer in the existing digital signal processor because this would be more economical than implementing the digital filter in separate dedicated hardware.

12. Regarding Claim 4, Rasmus further discloses a diode bridge (i.e., rectifier circuit) (Fig. 2, reference 240, 242, 244, 246; column 12, lines 13-17) that modifies a sine wave input to produce a series of positive “bumps” (i.e., rectifies the ringing alternating voltage), a capacitor (Fig. 2, reference 236; column 5, lines 41-44) connected between the TIP (i.e., an input) terminal and the a diode bridge (i.e., rectifier circuit), a transistor (Fig. 6, reference 608; Fig. 2, reference 238; column 5, lines 32-38) with its load path between the outputs of the diode bridge (i.e., rectifier circuit), the outputs of the diode bridge (i.e., a first and second voltage which are rectified from the ringing alternating voltage by means of the rectifier circuit) fed to the microprocessor (i.e., controller) via a variable voltage source, an operational amplifier, a divide-by-two circuit and an

Art Unit: 2644

opto-coupler (Fig. 2, reference 102, 252, 248, 250, 228; column 12, lines 17-31) and the microprocessor (i.e., controller) provides parameter information to a digital-to-analog converter that controls the resistance of the transistor (Fig. 2, reference 102, 230, 238; Fig. 6, reference 608; column 12, lines 32-35, 58-61).

13. Regarding Claim 6, Rasmus further discloses a diode bridge (i.e., rectifier circuit) (Fig. 2, reference 240, 242, 244, 246; column 12, lines 13-17), one output of which (i.e., the junction of the cathodes of 244 and 246) is divided by a voltage divider (Fig. 6, reference 604, 614) to provide an input (i.e., a component voltage) to a variable gain amplifier (Fig. 6, reference 612).

14. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rasmus in view of Fischer and further in view of Noll (Introduction to Telecommunication Electronics).

15. Regarding Claim 5, Rasmus further discloses the transistor control voltage derived from the difference between the inputs of an operational amplifier (i.e., a first input voltage and a second input voltage) (Fig. 2, reference 248; column 12, lines 17-44). Therefore, the combination of Rasmus and Fischer makes obvious all elements except the output signal being integrated by an integrator circuit upstream of the transistor. Rasmus discloses a digital-to-analog converter that produces the control voltage (i.e., is upstream of the transistor). Noll discloses that a low pass filter (i.e., an analog integrator circuit) is required as an output stage of a digital to analog converter to smooth the output waveform (page 316, 5<sup>th</sup> paragraph; page 317, middle figure). It would have been obvious to one skilled in the art at the time of the invention to apply the low pass filter taught by Noll to the digital-to-analog converter taught by Rasmus for the purpose of smoothing the output waveform.

16. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rasmus in view of Fischer and further in view of Dittmer (Linear Technology Magazine).

17. Regarding Claim 13, Rasmus further discloses the transistor as a MOSFET (Fig. 6, reference 608). However, Rasmus is silent as to whether the MOSFET is P-channel or N-channel. Therefore, the combination of Rasmus and Fischer makes obvious all elements except the MOSFET being N-channel. Dittmer discloses that N-channel MOSFETs provide superior performance at lower cost compared to P-channel MOSFETs (page 3, spanning columns 2 and 3). As such, it would have been obvious to one skilled in the art at the time of the invention to select the N-channel MOSFET as taught by Dittmer to the combination made obvious by Rasmus and Fischer for the purpose of realizing the aforesaid advantages.

#### ***Allowable Subject Matter***

18. Claims 3, 7 through 11, 14 and 18 through 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. Claims 12 and 15 through 17 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims if not for the lack of antecedent basis detailed above under *Claim Rejections - 35 USC § 112*.

20. Regarding Claim 3, as shown above apropos of Claim 1, the combination of Rasmus and Fischer makes obvious all elements except a digital power inverter upstream of the digital filter



Art Unit: 2644

and a digital rectifier downstream of the digital filter. Rasmus provides ring signal frequency information to the microprocessor by using an operational amplifier to generate pulses at twice the ringing frequency a divider to reduce the pulse frequency to the ring signal frequency and an opto-coupler to protect the microprocessor (Fig. 2, references 248, 250, 228, 102). As such, there is no motivation to utilize a digital power inverter to provide ring signal frequency information. Similarly, the microprocessor disclosed in Rasmus directly controls a digital-to-analog converter to produce a control voltage for the variable resistor transistor circuit (Fig. 2, reference 102, 230, 238). As such, there is no motivation to utilize a digital rectifier to provide an absolute value of a control signal.

21. Claims 7, 8 and 18 are allowable matter due to dependence from Claim 3.

22. Claim 14 has the same limitations as Claim 3 (i.e., a digital power inverter upstream of the digital filter and a digital rectifier downstream of the digital filter) and is allowable matter for the same reasons.

23. Claims 15 through 17 have similar limitations to Claim 3 (i.e., a digital power inverter and a digital rectifier) and would be allowable matter for the same reasons if not for the lack of antecedent basis detailed above under *Claim Rejections - 35 USC § 112*.

24. Regarding Claim 9, Rasmus further discloses a resistor (Fig. 6, reference 606) a transistor load path (Fig. 6, reference 608) and a capacitor (Fig. 2, reference 236) in series between the tip lead (i.e., the first terminal) and a diode bridge output (i.e., a reference potential) a controller making available a control voltage for driving the transistor (column 12, lines 32-35, 58-61). Therefore, the combination of Rasmus and Fischer makes obvious all elements except a second transistor, a second resistor, a second capacitor and associated limitations. The use of the second

Art Unit: 2644

transistor, resistor and capacitor configuration allows one set of components to operate on the positive half-cycle of the alternating current ringing signal and the other set to operate on the negative half-cycle. In Rasmus, operation on both half-cycles of the signal is accomplished through the use of a diode bridge. As such, there is no motivation to modify Rasmus by adding a second set of components.

25. Claims 10, 11 and 20 are allowable matter due to dependence from Claim 9.

26. Claim 12 would be allowable matter due to dependence from Claim 9 if not for the lack of antecedent basis detailed above under *Claim Rejections - 35 USC § 112*.

27. Claim 19 has the same limitations as Claim 9 (i.e., a second transistor, a second resistor, a second capacitor and associated limitations) and is allowable matter for the same reasons.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 703-305-4088. The examiner can normally be reached on Monday through Friday between 8:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forrester Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2644

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Daniel Swerdlow, Patent Examiner Art Unit 2644